

Application No.: 10/593,760
371(c) Date: September 22, 2006

REMARKS

Claims 1, 2, 5, 7, 10 and 11 are currently under examination.

Rejection under Obviousness-Type Double Patenting

Claims 1, 2, 5, 10 and 11 are rejected under obviousness-type double patenting in view of Claims 1-9 of U.S. Patent Application No. 11/722,659.

Notwithstanding the present rejection, the claims of the present application remain otherwise rejected. Applicants will file a terminal disclaimer, if appropriate, upon determination of otherwise allowable claims in the present application.

Rejection under 35 U.S.C. §102(b)

Claims 1, 2, and 11 are rejected under 35 U.S.C. §102(b) as being anticipated by Lien (U.S. Patent No. 4,902,417).

The Office Action states that Lien teaches a spiral wound membrane element having all of the limitations set forth in the claims. The Office Action states that the feed side channel component is fusion bonded polypropylene and is commercially available.

Lien does not anticipate Claims 1, 2 and 11 because Lien does not disclose all elements of the claims. In particular, Lien does not disclose a feed-side channel component formed by fusion bonding. Lien does not provide any disclosure of forming a feed-side channel component by fusion bonding. As such, Lien does not expressly disclose this claim element. Further, Lien does not provide any disclosure that necessitates that the feed-side channel component was formed specifically by fusion bonding, as opposed to, *e.g.*, a shear method which Applicants' specification demonstrates results in a structurally different feed-side channel component. As such, Lien does not inherently disclose this claim element.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *M.P.E.P.* 2131; *see also Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Lien does not expressly or inherently set forth the feed-side channel component recited in Applicants' claims. Accordingly, Lien cannot anticipate the claims.

Moreover, the presently claimed membrane and the membrane described in Lien are clearly different since Lien's disclosure is inconsistent with fusion bonding. The reason is as follows. Paragraphs [0025] to [0026] of the present specification teach:

The fusion bonding method for forming the net generally includes the steps of extruding weft and warp yarns from a number of nozzle holes arranged at two circumferential portions (inner and outer portions) of dies in an extruder while rotating the inner and outer nozzle holes in opposite directions, fusing and bonding the weft and warp yarns to each other to form intersections, dipping them into a cooling bath, and then taking out them. In the process of performing the extrusion, **the nozzle holes are arranged such that both nozzle holes do not overlap one another at the intersections of the weft and warp yarns** (this feature differs from the shear method), and the extruded weft and warp yarns are fused and bonded to each other with appropriate timing of fusion bonding.

As compared with the shear method, therefore, the **shapes of the weft and warp yarns can easily be maintained** at the intersections with no increase in the amount of extruded resin at the intersections so that the web-like deformation can be remarkably reduced and that the pressure loss of the feed-side channel can be reduced.

When fusion bonding is performed according to the above description, it is impossible to interpret Lien's teachings such that cross filaments 52 of Lien are divided in the intersections of the ribs 50 and the cross filaments 52 as shown in Fig. 6 of Lien. Accordingly, it is clear that Lien does not employ a net formed by fusion bonding.

Regarding the teachings of Lien, the Office Action states, "The material [of Lien] is fusion bonded polypropylene, which is commercially available." *Office Action* at page 3. As discussed above, Lien does not expressly or inherently disclose fusion bonding. Accordingly, Applicants respectfully submit that there are no facts of record to support the contention that "[t]he material [of Lien] is fusion bonded polypropylene." Furthermore, even if fusion bonded polypropylene is presently commercially available, such a fact would not establish Lien as anticipatory of the claims because present availability is subsequent to Applicants' priority date, and thus, is not prior art. Should the PTO consider that such Lien does provide fusion bonded polypropylene and/or that fusion bonded polypropylene was available prior to Applicants' priority date, Applicants respectfully request evidentiary demonstration of such in accordance with M.P.E.P. §2144.03 and *In re Zurko*, 258 F.3d 1379, 1385, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). In the absence of such evidence, Lien cannot anticipate the claims.

Rejection under 35 U.S.C. §103

Claims 5 and 10 are rejected under 35 U.S.C. §103 as being obvious over Lien in view of Boberg (U.S. Patent No. 4,213,858), Thalmann (U.S. Patent No. 6,106,715) and/or Janneck (U.S. Patent No. 4,022,692).

Claim 5

Claim 5 is non-obvious over the cited references because no combination of the cited references teaches a feed-side channel component which is of a three-layer type and has a warp yarn, an oblique yarn and a reverse oblique yarn.

Lien and Jannek teach two layer-type structures. *See, e.g.*, Lien at Figure 6 and Jannek at Figure 5. Boberg teaches a structure with yarns at right angles and in which two of the yarns are parallel. *See, e.g.*, Boberg at Figures 1-4. Thalmann teaches a structure in which two of the yarns are parallel. *See, e.g.*, Thalmann at Figures 2 and 4. None of the cited references, or any combination thereof, teach a warp yarn, an oblique yarn and a reverse oblique yarn. The references either teach a two layer-type structure or a structure in which two of the yarns are parallel. As such, it is not possible to combine the cited references to arrive at a three-layer type having a warp yarn, an oblique yarn and a reverse oblique yarn. Therefore, no combination of the cited references teaches all elements of Claim 5.

Claim 10

Claim 10 is non-obvious over the cited references because the cited reference teach away from any combination that would lead to the claimed membrane element.

As stated above, Lien and Jannek teach two layer-type structures. *See, e.g.*, Lien at Figure 6 and Jannek at Figure 5. Thus, no combination of Lien and Jannek alone can render Claim 10 obvious. Further, Jannek cannot be combined with Thalmann because the teachings of Jannek and Thalmann are incompatible. Thalmann teaches improving performance by minimizing the contacting surface area between the membrane and the feed-side channel component by having only the warf yarns contact the membrane. *Thalmann* at column 2, lines 25-37. In contrast, Janneck teaches a two layer-type spacer where the weft yarn forms an oblique angle, and teaches the benefit of the weft yarn contacting the membrane:

As perhaps best visualized with reference to FIG. 3, the blood 23 flowing through each blood channel 26 of the blood compartment (membrane 12) assumes a thin

layer configuration with the surface of the membrane 12 in contact with the filaments 18 undergoing a limited sinusoidal distention and the opposite surface of the membrane in contact with the filaments 20 being substantially fully supported to undergo only a very slight distention. Thus, masking (surface to surface contact between distended membrane layers) of the membrane 12 between overlying channels 26 is minimized to substantially maximize the surface area of the membrane 12 which is exposed to the exchange fluid. *Janneck* at column 4, lines 36-48.

Thus, Janneck teaches contact between the membrane and both filaments 18 and 20 in order to minimize membrane masking to maximize surface area exposure to exchange fluid. Accordingly, while Thalmann teaches having only warp yarns contact the membrane, Janneck, in contrast, teaches the importance of weft yarns also contacting the membrane. As such, for one of ordinary skill to follow the teachings of Janneck, it is necessary to proceed contrary to the teachings of Thalmann, and *vice versa*. It is improper to combine references where the references teach away from their combination. *M.P.E.P.* §2145.X.D.2; *see also In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983). The teachings of Jannek and Thalmann teach away from their combination. Accordingly, it is improper to combine the teachings of Janneck and Thalmann.

Furthermore Lien and Jannek cannot be combined with Boberg to render Claim 10 obvious because the teachings of Jannek and Boberg are incompatible. As stated above, no combination of Lien and Jannek alone can render Claim 10 obvious. Jannek cannot be combined with Boberg because Boberg teaches the advantages of a rectangular arrangement of yarns, while Janneck teaches the advantages of a bilayer with filaments intersecting at oblique angles. Specifically, Boberg teaches:

Referring to FIG. 1, the supporting net in accordance with the present invention comprises an outer layer of first strands 1a spaced apart and substantially parallel to each other, an intermediate layer of second strands 1c spaced apart and substantially parallel to each other but substantially perpendicular to the first strands 1a, and an inner layer of third strands 1b spaced apart and substantially parallel to each other and substantially parallel to the first strands 1a. *Boberg* at column 4, lines 7-15.

Thus, Boberg teaches that Boberg's invention is directed to a supporting net containing perpendicular strands. In contrast, Jannek teaches:

An improved non-woven support screen for mass transfer devices including a first set of parallel spaced longitudinally extending filaments having a predetermined thickness or diameter and a second set of parallel spaced filaments obliquely arranged relative to the first set of filaments and having a predetermined thickness or diameter approximately 1/2 that of the first set of filaments to provide improved control of membrane distention for minimizing the masking of the membrane surface by preventing excessive distention in one plane, to reduce the volume of body fluid layer in the membrane (low prime), and provide improved mass transfer efficiency while maintaining gentle mixing of the body fluid.
Janneck at Abstract.

Thus, Janneck teaches the importance of a bilayer with filaments intersecting at oblique angles. Accordingly, while Boberg teaches the importance of filaments arranged perpendicularly, Janneck, in contrast, teaches the importance of a bilayer with filaments intersecting at oblique angles. As such, for one of ordinary skill to follow the teachings of Janneck, it is necessary to proceed contrary to the teachings of Boberg, and *vice versa*. Since the teachings of Jannek and Boberg teach away from their combination, it is improper to combine the teachings of Janneck and Boberg.

As seen above, Lien and Jannek cannot be combined with Thalman or Boberg because the teachings of Thalman and Boberg are incompatible with the teachings of Jannek. Since Lien and Jannek teach only two layer-type structures, no combination of Lien and Jannek alone can render Claim 10 obvious. Further, since Lien and Jannek cannot be combined with Thalman or Boberg, the teachings of Lien and Jannek, absent more, cannot render Claim 10 obvious. Therefore, the cited references cannot render Claim 10 obvious.

Claim 7

Claim 7 is pending herein and is not presently rejected. Applicants submit that Claim 7 is novel and non-obvious over the cited references because no combination of the cited references teaches a spiral separation membrane element according to Claim 1, wherein the feed-side channel component net formed by fusion bonding has a relatively smooth surface as compared to the surface of the products formed by the shear method whereby damage to the membrane by contact with or wrapping and pressing onto the membrane surface is lessened in the process of assembling the element. Therefore, Applicants submit that Claim 7 as presently pending is allowable.

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CONCLUSION

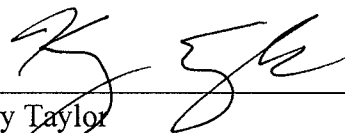
The present application is believed to be in condition for allowance, and an early action to that effect is respectfully solicited. Applicants invite the Examiner to call the undersigned if any issues may be resolved through a telephonic conversation.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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Dated: 12-May-09

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